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ABSTRACT

Computers can be valuable tools of humanization if educators use them to relate the curriculum to the students' lives and to make schools more desirable places in which to learn. Despite the facts that much of the content of both the country's generally accepted national goals and students' interests and problems is affective in nature, most schools concentrate mainly on the rote learning of factual material in the cognitive domain. Computers, looked at both from the instructional and the data processing viewpoints, can improve education in three ways. First, they can provide efficient cognitive instruction. Second, they free teachers to deal with affective matters such as values and feelings. Third, they create a situation in which the teacher can serve in a satisfying manner as a human interface between students and machines. To implement this humanistic environment, educators will need to build process-oriented curriculums which have a balance between the cognitive and the affective domains, design better computerized information management systems, and conduct a national assessment of models of man-machine systems. (PB)

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COMPUTERIZATION - A KEY TO HUMANIZATION

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I don't know what your experience as a student has been, but mine has been one largely of chagrin, that is that I'm really a drop-out. When I graduated from High School, only under coercion from my dad, I ranked in 4/5th of my class and my performance was so outstanding that the principal, who was a Phi Beta Kappa, wrote on my transcript, "This young man has absolutely no potential at the college level." So, I say that by way of expressing my rather unhappy experience as a student and I find that as I talk with young people today things don't seem to have changed very much.

Now that sounds as though I'm coming at you as a critic of the schools and the fact of the matter is that I'm not. I'm essentially a teacher, both by inclination and by background. I have been for the best part of my professional life a teacher, I am one now and I vigorously resist every effort to "promote" me again to some administrative job. In spirit and intellectually you might call me a humanist and by area of specialization I'm a curriculum worker. My major interest is in the humanistic curriculum, and in getting the schools to respond in some human way to the human being who's there. So for some time it's been my firm position that we must find a tool or a way of making school a more desirable place to learn, a place where education becomes a learning experience. I've so frequently had a problem understanding what the value was of what I was studying, to the problem that I faced. This relationship of the curriculum to the actual reality of one's daily life is a basic frame of reference to my rationale.

Initially, when you stop to think about the concept of humanization and the fact that a machine can become a tool in that process, they really seem to be contradictory. That is probably because I think we haven't taken the time to really consider that whole notion of how the two can be brought together. We haven't thought about it long enough, and more important, intelligently enough.

In my opening statement, I called the computer a tool. It is very important that we remember it as such. The computer serves the will of the humans who are responsible for its politics, for its policy, its programming, its performance. If the computer and humanization have been marketed in our culture as adversaries, it is only because we willed the computer to this adversary role. It is caricatured in the media as kind of a human being; we see it as a box, with a head, and appendages as though it really had the power to think. I can understand why the

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general public has expressed a deep concern regarding the Orwellian threat of that computer. We have been propagandized by the common media and I suggest that a challenge for our Association (AEDS) is to place that tool in its proper perspective.

The program should be that we bring together both the human and the machine, not as contradictory elements but in compatibility in an alliance. This "approachment" should render to each, the human and the machine, its own rightful province in a curriculum model where each may perform most effectively.

This basic jurisdictional question is the major theme for this convention. I ask that you maintain it as another of my major points of view.

Before looking at what we do in the public schools as a matter of practice, let's consider first what exists as a matter of policy, for these two ought to be consistent. The nation has said to those people in charge of the schools that we have a very clear set of goals, that we need to find some goals which the institution of the school is set to accomplish. There doesn't seem to be very much disagreement as to what they are. Whether you use the goals of your Educational Policies Commission, National Council for the Study of Education, White House Conference, or the Seven Cardinal Principles, or those of Phi Delta Kappa. They are consistently the same in substance. Basically their goals are to develop a nation of people that think critically, communicate adequately, work at some economically independent level, and leisure restfully within some context of the Judea-Christian principle. Ashley Montague, the noted anthropologist, calls it "living the good life." He says, "that all of man's activities can be classified into three general categories: the area of love, the area of work, and the area of play." Simplistic as that sounds, it works.

Some individual states, have established a set of goals of their own. In New Jersey we mounted a task force called the "Our Schools Project" composed of a wide representation of the many publics in the state. They labored for two years, and developed a policy statement for the schools in the State of New Jersey that have eleven outcome goals. I would like quickly to refer to them. Students of the State of New Jersey are to acquire basic skills in obtaining information, solving problems, thinking critically, communicating effectively; they are to acquire a stock of basic information concerning the principles of physical, biological and social sciences; analyze the historical record of human achievements and failures and correct social issues; become effective and responsible contributors to the decision making process of the political and other institutions in the state, and of the nation.

The student ought to be able to acquire knowledge, skills, and understandings to allow him to play a satisfying and responsible role as a producer and a consumer; fully acquire and form satisfying and personal relationships for a wide range of other people, including, but

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not limited to, those of social and cultural characteristics that are different from his or her own; to acquire a capacity for playing satisfying and responsible roles in family life; to acquire the knowledge, habits, and attitudes that promote personal and public health - both physical and mental; and to acquire the ability and desire to express him or herself creatively in one or more of the arts and to appreciate the esthetic expressions of other people; to acquire an understanding of the ethical principles and values and the ability to apply them in his or her own life; to develop an understanding of his or her own worth, abilities, potentialities and limitations, and last; to learn to enjoy the process of learning, to acquire skills necessary for a lifetime of continuous learning and adaptation and change.

That's a clear description of a fine human being. But it isn't enough to say that it's clear. We need to analyze really how closely those goals come to meeting the requirements of the kind of a life that you and I lead, because that is really what the school is challenged to prepare us for, to live a life of 67 to 70 years that the insurance actuaries tell us we may live.

How appropriate are those goals for the life that we, as adults and our students may have to cope with? I've been anxious to get an answer to that question and in my work as a teacher and a consultant in the public schools, I conducted a number of inquiries. I've talked and questioned a number of high school students; college students, undergraduates, and graduate, and public school teachers as well.

Let me give you a very brief summary of the survey that we have just finished in a high school with a student population of 800 in the state of New Jersey - the area is largely rural. We asked every student to write on a sheet of paper his perception to the question: "What are the most serious, ever pressing, troublesome problems which preoccupy you to find a solution?" Let me read you a selected set of responses:

1. "It's hard to find a friend. A friend that you can share your problems with; a friend that you can go to for advice, who can help you solve them instead of making fun of them.

2. "I want to be responsible for myself and learn what it means to be alive.

3. "To adjust to the situation of the separation of my parents and try to adjust to the new way of life. I was asked which parent I wanted to live with. I love both of my parents, it wasn't easy.

4. "Talking to my parents. My parents can't understand how I feel about this boy. I can't talk to my parents about personal things. I hate the fact that my parents have authority over me.

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5. "Accused of being a homosexual.

6. "Whether or not to go all the way with someone I love.

7. "Whether to decide to take acid or not. At first I was willing to. I figured why not? The biggest decision of my life was when I was asked by someone whether they wanted me to trip with them. At first I didn't, but after I thought about it awhile, I figured, if it didn't hurt him it wouldn't hurt me."

The last one:

8. "Thanks for listening."

104 students said that their main preoccupation was their parents. 86 were coping with peer relationships, 64 were worried about the future, 57 were worried about siblings, and 52 were worried about romance. 48 were concerned about drugs. 40 were troubled about death. 38 were worried about subject matter problems in school, and 33 were preoccupied with personal inadequacies, their teachers, and a broken home. The last two are tied. The faculty committee that studied this data commented: "Compelling though these statements are, perhaps there's real hope for when we ask approximately one-half of the faculty to participate in the same survey, we gain some insight; with the possible exception of drugs, our teachers have had or are having the same experiences, the same pressures, same worries, and the same problems that our students have. Question: "If we have learned to face life successfully, how can we help our students do the same?" - or better, "how could our educational experiences have been different in preparing us to cope?"

So there's the description of life as the student sees it, and as adults see it. I don't know how that matches with your life, but I would guess it's essentially not very different.

Now, let's look at the behavior that is necessary to get at the learning program to prepare a student for that set of problems. Human behavior is typically a mixture or a complexity of the emotional or the affective side of our behavior, and the intellectual, rational, or the cognitive side of our behavior. My premise is the affective, or the emotional, or the value side, bears critically upon the cognitive and the psychomotor domain. It's easy to think clearly when there is no pressure. It's easy to sit down and do systems work, and programming, and all the detailing and documentation of that work, when you don't have a deadline, when you don't have a manager or supervisor saying, "Will I have that this afternoon?" The emotional factor known as "pressure" causes our cognitive functions to become effective or less effective. Field goals are very easy to kick in practice, but very tough to kick from the 25 yard line with ten seconds to play in a tied game for the championship. To varying degrees, values affect, they shape, they color the rational and physical decisions that we make. For example, I know that the incidence of lip cancer among pipe smokers is quite high, but I simply enjoy it and I smoke my pipe, but I should know better, and I

say that "I should know better." We read the statistics on cigarette smoking in this nation. The statistics don't really mean as much until you show a student a photograph of the lung that has been removed from a human being and it is then that the affective quality of fear has an impact upon what the statistics say. So I ask you to question yourselves: "What are the serious ever pressing questions that affect your life?" There is essentially little or no difference when you look at the responses of adults and students. For myself, I wrestle mostly with knowing myself, especially as I relate to other people, mostly for those for whom I have emotion or value of love. I wrestle with how to deal with people who affect me, my friends, my colleagues at Glassboro; my animate, live environment, and my physical inanimate environment; my airplane, my house, and other objects I have some value for. I try to cope with finding answers as to with how to deal with those problems. Weighing alternatives and making decisions that are the kindest for all; making those decisions that hurt the least, those decisions that are the most peaceful and the most tranquil. I solve one problem and guess what, another one presents itself. Again I go through the entire process of finding alternatives and making decisions. Where does the stamina come from? You say sometimes, "How can I ever face any more problems this week and I wish Friday would get here very soon." And when I cannot solve those problems without hurting somebody, how do I cope with the anxieties, and the frustrations that beset me? We all find this to be the ongoing process that we call life. We can't change that - there's no way that either you or I, after expressing time after time how I wish it were different, can change it. It's a given! It's the reality that can't be tampered with.

If you look at those goals that the task force reviewed in New Jersey, you will find that very, very small part of them are cognitive. The greatest percentage, and I would estimate almost 90% of the content of those goals are affective. So it seems to me that's where the school, if it's going to be an affective educational program, is going to have to place its emphasis. Well, that gives us some kind of a base to work from.

The curriculum developer needs some type of framework to work with and there are a number of them around. The one that I like best is an organization of objectives by a team of psychologists, Krathwohl, Bloom, and Masia. These are a taxonomy of the behaviors and objectives in the cognitive and the affective sides of behavior. There is a set of objectives toward which the school could work as it builds a curriculum. I rely upon this taxonomy quite heavily, for they give some order to work with as we develop curriculum organization. There is a hierarchy; they go from a simple to complex in both of the domains; the cognitive and the affective. These two domains are the processes by which we learn, and therefore, they're the processes that we need to learn to cope with life. Indeed they are the substantives of the curriculum. The cognitive realm begins at its lowest level with knowledge acquisition. The order then moves up to comprehension, application, analysis, synthesis and finally, evaluation.

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Let's look at that first realm for a minute. Let's look at that first realm which is "knowledge." We have to learn specific facts and terminologies; the ways of organizing them, studying them, judging them, criticizing ideas and phenomena, the knowledge of major ideas, skills, and patterns by which those ideas are organized. Current practice in the schools, when evaluated by this hierarchy reveals a wide range of serious contradictions between goals and practice. Possibly this description does not characterize the school in which you presently work or which you attended. It does characterize my experience which gets me into public schools on a fairly regular basis in some kind of curriculum project. I observe many teachers from kindergarten through twelfth grade and on the college level as well. My graduate students claim that we college professors are the poorest teachers of them all. I observe the following things go on: current curriculum practice is based upon an emphasis of facts, time, dates, places, chronological ordered, labeled, and named. Occasionally, there is a concept or two floating around in that myriad of facts. In the instruction that I have seen, I find relatively little emphasis allowing the students to analyze the relationships between, or the concepts that pull that data together. I see no real planned attempt, instructionally, to have students translate, or interpret, or learn any of the higher level cognitive functions. It is the exception to find students hypothesizing, speculating, trouble shooting, inquiring about relationships that they may perceive. I see little instruction beyond the first of the five levels in the cognitive domain.

I'm going to repeat that; it is an important evaluation that I'm asking you to test. I see very little instruction beyond the one way flow of facts to young people, recording of those facts, and then getting them back on Friday. The textbook is a fundamental tool, a crutch. Data transmission a one way flow, it's lecture oriented, and file generation occurs in taking of notes. Interaction is typically teacher initiated, and controlled, and there is superficial questioning rather than indepth analysis. Students are passive, rather than active. Testing is usually true-false, fill in, and matching, and it forces the student to behave as a master crammer. Thursday night is always a tough night at home. You've got to get ready for the end of the chapter quiz on Friday. What we see is a total concentration on that low level cognitive, instructional strategy and I'll wager that six to eight weeks later,the student cannot pass that test without some sort of review of the material; that is, the material has not been "learned".

I have my graduate students do an "STM" and that's called the Significant - Trivia and Minutia Caper. The basic ERIC file for that is the waste-paper basket of the teacher mimeograph room. You may go through that file and take your choice. The last goodie that I saw was "Write the name of Columbus' dog", for an 8th grade social studies class.

Evaluation is equated to testing in an objective format, and learning becomes a function of rote memory. Students are turned off; they are disaffected, alienated, and at times, hostile. Teachers enjoy a low level of job satisfaction. The community wonders what the school is all about, with a drop-out rate of between 45 and 50 percent and an illiteracy rate which is staggering to a nation of free people. Society begins to show the strain. The symptomology of this educational approach is evident in the society in which we live.

Where do teachers find time to interact, to discuss, to do value clarification, to talk about self image and self worth, to test relationships between students and other people, and to talk about differences between people. Where can we get time to deal with the processes of introspection that the student really needs in order to cope with the world we all face? The major part of the problem is that we have the cart before the horse. We have deified subject matter and relegated the affective domain to second rate citizenship. I don't know when Christopher Columbus, who discovered America on July 4, 1793, ever helped to solve a problem. I've never met that gentleman and wouldn't know him or what he could do to help us in some of the problems that face us in our daily lives. The same is true with much of the material in the curriculum. Take, for example, the great emphasis placed on Shakespeare in the public schools, and the stress on his iambic pentameter. I've often wondered how we have overlooked so many answers to our problems that reside in the beauty of Shakespeare's work. Look at the advice of Polonius to his son, Laertes, when he said, "Above all else, to thine own self be true". So we've missed the substance for the format and the mechanics. It's not in the rhyme or how Polonius said it, but it's in what he said. Shakespeare wrote of the human condition and we need to study what he said rather than how he said it. Again, it is the cart that is before the horse and there is a great deal in the content that is valuable in developing adequate personalities. May I refer you to the 1962 Yearbook of the Association for Supervision and Curriculum Development of the NEA called Perceiving, Behaving and Becoming, edited by Arthur Combs. They certainly describe a very adequate individual. I think we ought to be clear that education cannot ignore the cognitive skills and functions, but this includes the full range of that domain.

Our nation does not need illiterate, unthinking, but sympathetic and valuing citizens. While it does not need the reverse, we may have more than we want of noncaring valueless citizens who cannot think critically. The schools of the nation require a curriculum that is characterized by a balance. A balance between the cognitive and the affective, and a curriculum which integrates the student into his real life.

The persistently nagging question comes from the teacher, "How do I find time to cover the material? To test that material, apply it, present the problems, question the student?"

Here enters modern technology in the form of this computer. It can do the cognitive drill and practice better in the long run than any teacher, for computer assisted instruction is viable. I would not demean this assembly by reciting the litany of available CAI programs that are available in practically every subject with skills for children from pre-school and early childhood on to the 12th grade and beyond. Consider then the power of this computer to assist the learner achieve proficiently in all levels of the cognitive domain, especially in those higher realms.

Consider also the advantage of having the computer rather than the teacher handle these components of instruction. I list just a few of those advantages. The computer is consistently patient, never irascible on a Monday after his favorite pro-football team loses by a point. The computer is rarely late, suffering no traffic or automotive problems.

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It undergoes few domestic traumas with husband or wife. It is obedient, loyal, faithful and trustworthy; and it does not form cliques to "get the administrator." It is acquiescent and understanding of the district's financial problems at contract time. It is not prone to strike. Even tempered, it will not offend any student, making the life of the administrator and guidance personnel pleasant and full of equanimity, having no angry parents beating drums of complaint. It does not talk back nastily; it attends all faculty meetings, and is never absent. The computer is fair, objective, unbiased, and it has no teacher's pets. The machine has unfaltering stamina. It can test and record answers; it computes all data regarding the students' achievement, with norms for local and state and national purposes. It can sort and rank and provide the managers with all kinds of data to make decisions about the instructional system.

While Computer Assisted Instruction cannot be viewed as a panacea, it does have two major areas of potential. I call them the instructional component and the data component. First of all it's the most beautiful individualizer of instruction you'll find, because it is never ahead of the student. It stays with him all the time. It never goes any faster or any slower than the student is able to go. So it deals classically in the one to one head on situation with the student. The hardware combination may be cathode ray, with or without a terminal. The hardware is just beginning to show us the potential of that machine. It records the response items and the time between items generated by the student, and this second component is very critical because it helps us to manage budget and instruction from a computer based system.

Someone will ask, "What happens when the machine breaks down?" or "blows a circuit?" Well, I think we'll do pretty much the same thing when the buses don't run or when it snows or the boiler breaks down or a transformer blows out or when the teachers have a sick day or what else? You simply shut the school down, have an inservice day for the faculty that's around and call the computer technicians to come fix it! I think you get the point. As long as the teacher continues to see his or her teaching function and role as mechanistic and non-humanized dispensers of information, then that role as we have known it, is going to be increasingly unjustifiable, both intellectually and economically. The longer this instructional mode continues the more vunerable will be the teaching position to the budget makers, administration and the policy makers.

I recently finished the design for a plan to a 16 million dollar high school for the Atlantic City Public Schools to house 3200 students in a school within a school concept, with four separate houses. We built into that design a hardware capability that could provide an almost totally computer assisted instructional mode. With terminals in every home room, it records attendance, generates a daily individualized schedule based on yesterday's performance by that student. It orders up tapes, both program and/or audio visual cartridges, has them on line and advises learning resource center personnel when and to which carrel they are to be transmitted. Response recording, dialogue from the computer to the student, elapse response time, item analysis, all the computer assisted instructional routines we know can work can be implemented. Guidance

records and students' records matched with college applications and SAT scores; job occupations - matching student potential and achievement; and on and on and on. This is real and not "pie in the sky." I refer you to the work of John Deal, whose concept is totally realistic and totally in line with this point of view.

Now, I do not advocate a teacherless school. My view of the teacherless school is that it would be a tragedy! This would be one of the most damaging pieces of history in American Education, for the teacher is, in his most natural role, the most significant, the most critical factor in the model that I have described and for that matter - in any model. Well then, what has the computer done to humanize education? I think there are two immediate answers.

1. The teacher may now serve more as a humanistic interface between the student's performance on that computer, and a student's emotional or affective response to that performance. The teacher cushions, and interprets the blow of failure, or poor performance by that student. The teacher supports the student psychologically, as the human factor in the learning process should. Unburdened by the computer of the need to cover the material or get through the book, the teacher now has time to work with the student in groups or individually and has time to ask significant questions, identifying blocks to learning, supplying that clue, that relationship to one idea of one concept to another, triggering successful learning of a whole series of new ideas. In this role the teacher becomes truly an agent who facilitates and refines the learning experiences. Read Gordon Sabine's study for the ACT called Listen and This Is What You'll Hear. High School students particularly are saying "we value the teacher who is willing to listen, who is willing to talk with us and help us explore that entire affective domain." The time is now made available so that the teacher can be patient, and be kind, and unburden the frustrated student.

2. Secondly and in reality much more significant, CAI places the teacher into a role that is rarely occupied today. The teacher implements the curriculum of "how to live and survive the frustrations of the good life." ASCD calls it "Life's Skills," in their 1969 publication edited by Beatty and I recommend it to you. I think it's an excellent piece of work in line with the posture that I have taken here. Altschuler and Irey, of the University of Massachusetts, called it the Psychological Curriculum. Falzetta calls it "The Man Curriculum". Its central theme is man and this "good life." Its study topics are those aspects of the human condition which beset us all and chronically so: Love, fear, anxiety, guilt, frustration. The critical consideration here is that the teacher merges the affective with the cognitive and teaches how these states affect our personalities and our conduct. For ages the schools have loudly proclaimed that we need to introduce the human factor into the learning process. In practice, however, we have relegated the teacher to the role of a mechanic. Now we have a machine to handle the mechanistics and it's time that we saw to it that humans handle the humanistics and I think the jurisdiction here is obvious. Our society can now be certain that those values that we want our young to have will be transmitted from one generation

to the other, but now, partially by the machine and partially by the human being. From this perspective, the teacher takes on a more significant role than ever before in the history of American Education.

Now, ironically let's look at what we have - the computer, at first, and still, the slave, working at the will of the human has freed the human to assist others to become better human beings. The computer emancipates the teacher in the role of guiding that student to love learning. The teacher assumes the role of an experienced guide and there is no one else better equipped for this critical task than the teacher. But, the teacher cannot do it nearly as well without use of that tool. For the teacher, emancipated by the computer, is freed of his previous role and now has the time. Now it is time for the teacher to shed those bondages of past practice and assume properly the role, pro natura rather than contra naturam: the most natural role, rather than the unnatural role. History and society can wait no longer, it is time to begin labor dealing with the human condition, because for better or for worse our condition is what it is, and human is what we are.

In closing I'd like to say that those planners of this AEDS conference deserve our accolades for conceptualizing this bold and visionary theme bringing together and developing that "reapproachment" between man and the machine. And let this speaker leave with you, what I hope is a challenge that you might carry with you as you go through the sections and panels of this conference. I call for this - First, an increasingly sophisticated level of computer based information management systems. Secondly - I call for a balanced curriculum that is based on the reality of our life today. Thirdly - I call for a process-oriented curriculum, with sensible jurisdictions for both man and machine; the former the master, the latter a tool; and, Fourthly - and most critically in this array, I call for a national look, a national assessment to develop a model that will detail this new alliance between the man and that machine. The new role for teachers will call for some very radical points of view, in college teacher preparation programs, in certification standards, evaluation procedures, and in the public's attitude toward what the public school should really do.

I believe that that constitutes our challenge for this international body and for you assembled. AEDS has unquestionally the talent to tackle and resolve that set of national concerns.

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